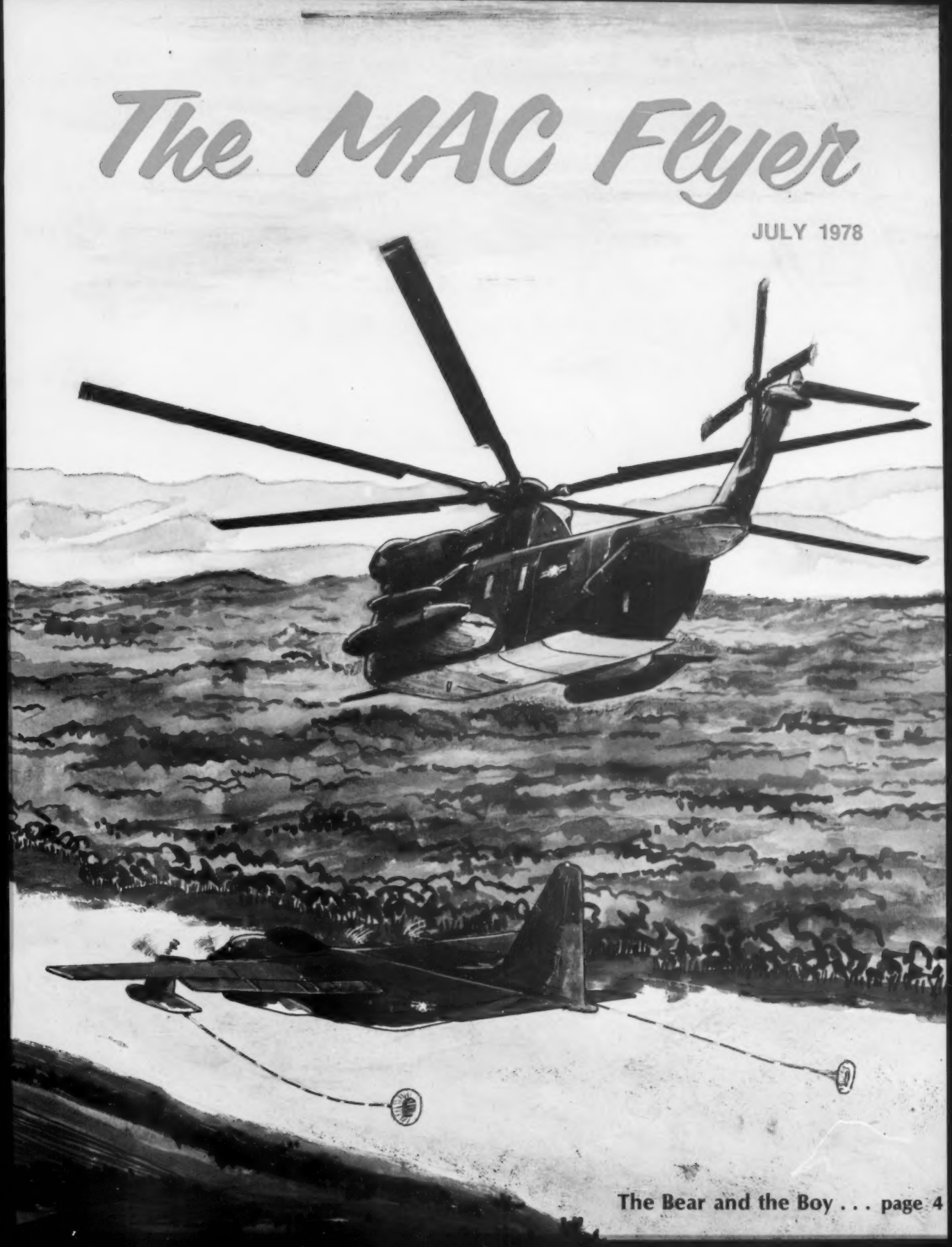
The MAC Flyer

JULY 1978



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The MAC Flyer

For Greater Safety and Efficiency
in MAC Air Operations

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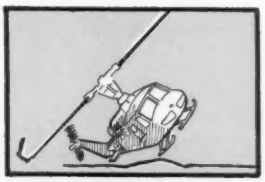

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The Winners:

1978 MAC Flying Safety Writing Contest

First place in the 1978 writing contest goes to Capt David A. Laubhan, an HC-130 pilot with the 1551st Flying Training Squadron, Kirtland AFB, New Mexico, for "The Bear and the Boy." His story (on page four of this issue) is about the experiences and changing attitudes of a young copilot who flies combat rescue missions in Southeast Asia.

Lt Col James S. McReynolds, 435th Tactical Airlift Group, RAF Mildenhall, United Kingdom, wins second place for his story, "The Amen Corner." He gives us several vignettes of Air Force life that explore the philosophical and practical differences between integrity and expediency.

"Bermuda High" brings third place honors to Maj J. Darrell Lindsey, 155th Tactical Airlift Squadron (ANG), Memphis, Tennessee. The guardsman rolls back the clock to the days of Ole Shakey and tells the story of an aircrew on an all-night trip. Major Lindsey won honorable mention in last year's contest.

The 1978 Flying Safety Writing Contest netted 44 fine entries from nearly every part of the MAC family. The judges selected nine honorable mention winners: "No Significant Notams" by Flt Lt W. R. Shoobridge, Aircraft R and D Unit, RAAFB Edinburgh, Australia; "It Pays To Know" by Capt Gregory A. Maul, 1551st Flying Training Squadron, Kirtland AFB, New Mexico; "Alone" by Maj James A. Hassell, HQ MAC Stan/Eval, Scott AFB, Illinois; "Someone Behind" by Capt Marcus L. Sherrill, AF Global Weather Central, Offutt AFB, Nebraska; "Ah, So Now You're a Pilot" by Capt Jack D. Peterson, HQ MAC Plans, Scott AFB, Illinois; and "A Matter of Teamwork" by Capt Richard P. O'Dell, 1551st Flying Training Squadron, Kirtland AFB, New Mexico.

Honorable mention also goes to 1st Lt Raymond A. Beltz, 55th Aerospace Rescue and Recovery Squadron, Eglin AFB, Florida, for "Know 'Em Blindfolded"; SSgt William R. Madden, 702d Military Airlift Squadron (Associate), McGuire AFB, New Jersey, for "At the DH in Darkness"; and to coauthors Lt Col Owen M. Lee, 443d Technical Training Squadron, Altus AFB, Oklahoma, and Wayne G. Sharples, 3625th Technical Training Squadron, Tyndall AFB, Florida, for "The Saga of the Bandersnatch Warning Light."

The first, second, and third place winners will receive walnut desk sets in tribute to their accomplishments. The honorable mention winners will get a handsome wall plaque. A prize-winning story will appear in *The MAC Flyer* monthly.

First Place, 1978 MAC Flying Safety Writing Contest

The Bear and the Boy

by Capt David A. Laubhan
1551 FTS
Kirtland AFB, New Mexico

Maturing is normally a slow and protracted process. But sometimes when circumstances and personalities jell, it can happen overnight.

Damn, I hate this place! The thought only crossed 1st Lt Danny Schultz's mind four or five times a day. This particular time, it had been brought on by an all too familiar occurrence, the daily departure of a 141 bound for Clark, "The Freedom Bird." "The Silver Samlor"—it was the only airplane Danny cared about. A great way for a Rescue 130 copilot to feel, but why not, he thought. After all, this isn't my war. I wanted to go to Eglin, not Korat. Danny could feel a big thirst coming on as his ten-speed rounded the corner near the mail room and pulled up in front of the BX. It must be a hundred degrees!

This place is always so crowded at noon, I don't know why I ever stop here, he thought as he chained his bike to the rack. The only thing that would make the day worthwhile is if my Sansui amp came in.

"No amp! No mail!" he grumbled as he mounted his bike and darted across the path of oncoming traffic. "This place makes me sick."

The rest of the trip to the squadron building was a drag. The only highlight was a short glimpse of the Thuds being readied for the next day's sorties. Danny fantasized about rolling in on a bridge up North or knocking out a SAM site. Real flying . . . being the boss, not just a right seat gear raiser on a maxed out HC-130. He wondered if his ops officer knew he was 10th in his UPT class.

As he slid his bike into the rack, Danny noticed the squadron's alert truck was not in its parking spot—unusual for this time of day. The missing truck almost made him forget how hot and sweaty he was.

First stop was always the cramped room where a little pooying sold soda. Second stop was usually his desk back in the corner of the training office, the one with the majestic view of Plexiglas and grease. But this afternoon he bypassed "the hole," and went down to the Current Operations office to get a clue on the missing alert truck.

Current Ops was jumping. Major Woods, the squadron's ops officer, was on the phone to NKP. Harry and "The Bear" were poring over the big scheduling board, now unable to accept the present state of what had taken them the greater part of yesterday to build. The ops clerk had his typewriter going at full speed. The remaining handful of people in the now crowded room were, like Danny, curious spectators.

"What's going on, Jack?" Danny asked another onlooker.

"A couple of F-4 jocks took it in the shorts south of the PDJ a couple of hours ago," Jack explained as Danny finished his coke and discarded the empty with a crash in a nearby wastepaper basket. "I think it's pretty thick bad guy country. They scrambled the alert bird to help the SAR effort."

"Typical," Danny grumbled to himself. "A good mission breaks and here I sit."

"Scheduling is trying to put together an extra crew for a first-light mission tomorrow morning," Jack continued.

That was all Danny needed to know.

"Hey, Harry, do you still need a 'co' for tomorrow's crew? I haven't flown for over a week," he shouted over the rumble of activity.

"Okay, Danny, you're on. It's an 0300 brief so why don't you split for the hooch and get a good night's sleep. The SAR area is crawling with bad guys, and it could be a long day," Harry cautioned.

Danny didn't need to be told twice to go into crew rest. About-face and gone! He mounted his trusty Schwinn and moved slowly toward the cyclone fence gate. "The whole afternoon to screw off," he gloated to himself. A cool southwesterly breeze had come up. The afternoon would be pleasant, despite the 100 degrees.

Danny wheeled around the last tight turn and glided past the doors of the hooch toward a tangle of parked bikes.

"Hey, Mike, let's hit the tennis courts. They're all empty."

Mike Turner, Danny's roommate, was just returning from the shower, clad in only a towel and shower thongs.

"Give me a break, Dan, I just got up. We didn't land until four this morning," explained Mike.

"C'mon, turkey. How often do you see empty tennis courts in the afternoon?" countered Danny.

"Everytime it's 100 degrees," Mike came back. "We'll die over there!"

Danny continued the attack and soon, due to Mike's love for the game, the two were engaged in a battle of backcourt lobs and topspin forehands. Two hours passed quickly. The sun was going down, so was the temperature, and so was Danny's stamina.

"Thanks for the game, Dan, better luck next time," said Mike with a trace of a smile breaking across his face.

"If *I'd* slept all day, I would have played a lot better," exclaimed the loser with a hint of disgust in his voice. "How about rolling me for a few drinks? I can't lose at everything."

As was usual with Danny, when things were going bad, they went full throttle. Three straight losses left him wondering if there was any justice left in Southeast Asia. Having had enough, the now lightheaded lieutenant rose from his chair and mumbled something about crew rest and tomorrow's big mission.

"How about some chow before you hit the rack?" asked Mike.

"Nah, I don't feel like it," Danny managed through a burp. "See you tomorrow."

He exited the bar, stopped momentarily to pet Roscoe, the legendary hound, and walked slowly back to his room. The sight of his bed was too much. He fell into it, working his tennis shoes off only a moment before his eyes slammed shut.

"Airborne backup for the primary King Bird," Danny said disgustedly.

"Could have been worse," said The Bear as he strapped into the left seat. "You could be one of those fighter-pukes they're going to try to pull out of the jungle this morning. The *intel* maps looked pretty hairy to me. The Jolly Greens have a tough day ahead of them."

TSgt Bronson, the flight engineer, handed the AC the form F folder. The Bear checked the figures and grimaced. Gross weight—162,000 pounds. Although it was only 0500, the temperature was already 85 degrees. He scrawled his name on the form and thought about high gross weights and hot days.

Engine start and runup went smoothly with the exception of a few checklist items the copilot missed. These minor lapses were brought to his attention by Sergeant Bronson and corrected. The last exchange brought out a terse remark from the right-seater, solidifying the engineer's opinion of junior junior-officers.

"Crew, we're cleared for takeoff," The Bear announced over the interphone. "Loadmaster, are you all set in the back?"

"Yes, sir, ready to go," a voice replied.

"Copilot, back me up on the throttles. Your yoke," instructed the AC.

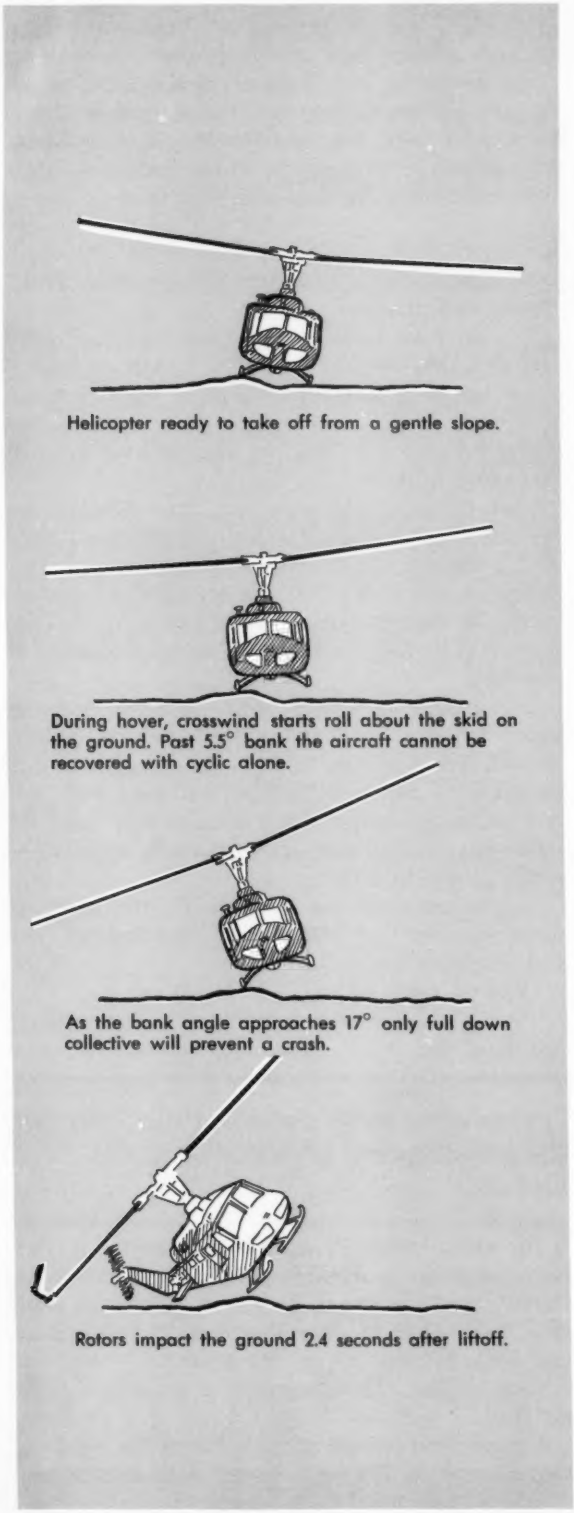
"From what I can make out the Jolly got the hell shot out of him during the pickup."

The Hercules slowly started its takeoff roll. The runway-remaining markers moved by as slowly as Danny could remember. As the "6" passed his window, he strained to remember if he had ever seen that while he was still on the ground.

"Go!" called The Bear, giving a quick glance to the right.

Almost simultaneously, he rotated the nose of King 22 upward. The machine remained earthbound

(continued on page 18)



Helicopter ready to take off from a gentle slope.

During hover, crosswind starts roll about the skid on the ground. Past 5.5° bank the aircraft cannot be recovered with cyclic alone.

As the bank angle approaches 17° only full down collective will prevent a crash.

Rotors impact the ground 2.4 seconds after liftoff.

Captain Marble's Magic Maneuver

by Maj John W. Petersen
HQ MAC Flight Safety

Dynamic rollover might best be called sleight-of-flight. And it's *not* done with wires and mirrors.

The H-1 pilot was doing slope landings during a local training mission. He lifted the Huey to a hover with the right skid planted firmly on a five- degree slope and the aircraft level. A gust of wind nudged the copter and it started to roll slowly to the right—nothing unusual. Right, guys?"

Captain Marble accepted the collective grunt of acknowledgment from his safety meeting audience as an indicator that they were at least mildly interested in what would happen next; he continued.

"So the pilot put in what he thought was enough cyclic to correct the slight roll, but the rate steadily increased. Then he put in full left cyclic, but the roll continued and the main rotor struck the ground."

By now half of the audience was leaning to the right.

"The H-1 ended up on its right side," he continued, "minus the main rotor. The uninjured pilot scrambled out the left door and stared incredulously at the machine. The accident board determined that the pilot had encountered dynamic rollover."

The listeners nodded a collective agreement. The flight safety officer felt he'd made his point, so he concluded the monthly exercise while he was ahead. The flyers filed out of the briefing room with some

good-natured banter and Captain Marble began to fold up the viewscreen.

"Captain, 'scuze me, sir, but I still don't understand." It was Lieutenant Newby, one of the detachment's newer copilots. "You said everything was normal. The helicopter was mechanically sound. The pilot was experienced; he was doing a normal maneuver. All of a sudden the helicopter's in the dirt and this guy's crawling over the side. What's this 'dynamic rollover'—a new way for the accident board to say 'pilot error'?"

"Not really," Captain Marble smiled. "Dynamic rollover is one of those 'magic' oddities that we don't see too often—thank goodness."

"Well, I think I remember something about it in the Dash One."

"Yeah. There's a 'caution' there, but it doesn't tell the whole story. Give me a hand with this projector and I'll explain." The fly-safe guy led the copilot down the hall to his office. With the lieutenant's undivided attention he embarked into his explanation.

"Let's take a closer look at the three kinds of rollovers. It'll help you understand just what this helicopter 'gotcha' really is. First, there's static rollover. It's the maximum slope a thing can sit on before it tips over. It applies to Volkswagens, Jolly Greens, and even squadron commanders. For the H-1, it's about 35 degrees."

The lieutenant nodded and the captain continued. "Then there's critical rollover angle. It's the maximum slope you can sit the helicopter on, apply full uphill cyclic and have zero roll rate." The captain gestured, much like a fighter pilot. "The flight controls are holding you on the slope; for the Huey it's 17 degrees."

Again, the youngster nodded.

"And finally, there's the culprit in that accident I was talking about: dynamic rollover. To get the chopper to do this you need the thrust about equal to the weight and have one skid on the ground and the other off. Something, maybe a gust of wind, starts a roll about the skid that's on the ground. Once you start a rolling movement, dynamic rollover can occur with less than five degrees of bank. You've got about two and a half seconds to do the right thing."

"Sounds like you could see that one coming—you don't ever take off if you get a skid stuck. So what's the big deal?" asked the copilot.

"Well, the real problem is the insidious onset of dynamic rollover—it sneaks up on you. The roll rate isn't much different from what you'd expect in a hover and you might react with a cyclic input. But if you're starting dynamic rollover, only full opposite cyclic applied within one and a half seconds after it starts can stop it. Remember it takes your brain about a half second to interpret the sensory inputs that tell you the aircraft is rolling, so that leaves you less than one second to analyze the situation and take the proper action, as the saying goes."

"That's not enough time," protested the younger pilot. "So what am I supposed to do when the helicopter decides to play dead bug?"

"First, know if you're set up to get into dynamic rollover—like when you're on a slope and there's a crosswind, or if the CG is off center quite a bit, or if you get a skid stuck. Then be very suspicious of *any* rolling movement while you're taking off. The second thing is to know the real cure. You figured you'd never get the cyclic to the stop in time to keep the thing right-side up, but if you push the collective to the floor you have a good chance of saving it."

The copilot looked surprised. "So that's the trick? Just put the collective down fast and sit it on the ground."

"Yup," affirmed Captain Marble.

"Wish you'd said that in the safety meeting."

"Me too."

Dynamic rollover: less than two and a half seconds till disaster.

Getting from point A to point B is only part of the job if you're . . .

A Full-Time

The examiner leaned over the navigator's right shoulder. "Point out the Echo Delta beacon on the radar," he said on hot mike.

"Huh?" The navigator looked at the examiner with a perplexed countenance. The Starlifter was ten miles from touchdown at Elmendorf; the weather was 300 and one.

"Look at your letdown plate and compare it to the scope picture," the examiner explained. "Where's the beacon?"

The troop at the panel picked up the letdown book, turned it sideways, then upside down. He looked at the scope and shrugged.

The examiner reached over and flipped the azimuth-stab switch on and the scope righted itself. "Do you see it now?" he asked.

"Oh, yeah," his examinee responded. "There it is." And he pointed at a small peninsula on the scope.

"Right. Now tell the pilot where he's at."

"I have you four miles from the beacon on radar," the navigator said over interphone.

"Oh, yeah. Thanks," the seasoned left-seater responded.

As the 141 taxied in, the examiner sat down in the inboard seat next to the lower bunk. "Learn anything?" he asked the navigator on hot mike.

"Technique," was the reply.

"That's right," the examiner agreed. "But it works, doesn't it?"

"Yeah, I guess. But you're being awfully nit-picky, Jim; I'm not a frustrated pilot," the younger navigator argued. "I made a deal when I went through nav school: If pilots don't shoot celestial or take loran fixes, I won't make approaches and landings. Besides, they've got all sorts of instruments up there to tell them where they're at—they don't need me babbling on the interphone."

"Bill," the examiner challenged, "I think you're a *part-time* navigator—"

"C'mon, Jim," the young one interrupted. "I do my job, just like the regs say. Maybe I don't know the equipment like you do; I don't have but 4,000 hours in the 141. You said yourself that my three-star was good. And my ETA's were never more than a couple of minutes off. *That's* my job and I do it well."

Jim shook his head and punched off the hot mike as Bill worked on the after-landing checklist.

It was late morning by the time the officers got checked into the BOQ. The weather had cleared and it was sunny and warm as the crew headed for the O'Club. Steak and eggs would climax the long day from Yokota to Elmendorf.

With stomachs filled, the four green-baggers collectively leaned back in the soft dining room chairs. The aircraft commander lit up a panatela.

"This has been a good trip," he started. "It's always a pleasure to have crewmembers that know

Navigator

by Lt Col Orlen L. Brownfield
Supervising Editor

what they're doing. I'll get some trip reports written up when we get back home."

"Hey, neat," the copilot responded. "Something for my OER. I might even make captain." Everyone chuckled.

"Bill, especially you," the AC looked at his navigator. "I wish I had as much confidence in all the squadron navigators—aireps on time and accurate. And on centerline every time we coasted in."

Bill smiled smugly at Jim. The unspoken communication to his examiner was one of "I told you so."

"And the extra stuff," the pilot continued, "like your call on final today. Class."

"Oh, c'mon," Bill responded. "You weren't lost, were you?"

"Oh, no," the captain shook his head slightly. "We had the tacan and ILS tuned in. Let's just call it 'reinforcement.' "

Now it was Jim grinning at Bill.

"But there have been times," the AC continued, "when I asked for that kind of information and got a smart answer or none at all."

Bill sat silently as the rest took a last swallow of coffee and began to sort out the checks.

"I think I'll cop a few Z's," said the copilot as he stood and stretched.

"Me, too," the pilot yawned. "Jim, are you going on with us?"

"No, I'll head back for Yokota tomorrow. Got another checkride to give."

"I think I'll have another cup of coffee and talk to Jim," Bill said. "See you guys later."

The two sat silently for a moment after the pilots departed, then Bill spoke. "Okay, so you think I'm a part-time navigator. What's your definition of a *full-time* Magellan?"

"Well, that's a toughy," Jim said thoughtfully. "I guess, in one sentence, it would be a navigator who monitors the position and performance of the bird from gear up to touchdown. That's what I try to do. Point A to point B is only a small part of the job."

"That makes you a combination pilot, engineer, and navigator," Bill mused. "Don't the other crewmembers feel like you're sticking your nose into their business?"

"Not often. Mature crewmembers realize that we're all on board for one reason: to accomplish the mission—safely. That's where the other parts of your job come in. I call them 'out of's' and 'into's.' The ability to pinpoint your position overwater is something to be proud of—and the most apparent thing you do. But overwater navigation isn't a life-or-death situation."

"What do you mean?" Bill asked.

"Well, you've known some navigators that were really marginal as far as their ability to keep close track of the aircraft. ETA's five or ten minutes off—penetrating the ADIZ 30 or 40 miles off course. Some of them got downgraded—some were even F.E.B.'ed. But they aren't dead. That's where the 'into's' and 'out of's' come in."

Bill shook his head. "I'm still lost."

"Okay, how many ways can you kill a crew? One way is to screw up your fuel planning and computations and run *out of* gas. Another way is to shirk your radar monitoring and run *into* a thunderstorm. But probably the most important is not monitoring approaches and departures and letting your aircraft run *into* the terrain. These are the killers—busting an ADIZ is just embarrassing. Now what do *you* think is most important?"

"Are you saying that all those accidents involving ground collision and thunderstorms were caused by navigators?"

"No, Bill. I'm saying that a full-time navigator could have prevented them. Look at our departure from Yokota last night. You spent the first five minutes after takeoff computing ETA's and working on the fuel chart. You didn't even look at the SID. And on descent into Elmendorf, you were trimming your chart and cleaning up your area. And I'll bet tomorrow, you'll be doing the per diem on descent back home."

"Good grief, if the pilots can't find home station without me —"

"You're forgetting the B-52 in Michigan. And how about the 141 a few years ago that crashed into the Olympics. Those airplanes crashed in the crews' backyards!"

Jim paused. "Just look at the airlifters that MAC has lost in the past few years and ask yourself, 'If I'd been aboard, could I have prevented the accident?' In the great majority of the accidents I think I could answer yes. I think they were 'navigator-preventable.' The 141 that smashed into the mountain in South America—the 130 out West—and maybe even the Starlifter over the U.K. I think a forceful and confident navigator could have kept those crews alive. Forceful and confident—remember the European accident several years ago where we spread an aircraft across the countryside? The navigator warned the pilots that they were too low—the pilot responded with something like, 'That's okay; we're visual.' Those were more than likely his last words. I like to think that I would have used a few expletives and got those toads to listen to me."

"I don't know," Bill said carefully. "Suppose I jump in somebody's case and I'm wrong?"

"You remember the crew that lost a couple of engines on takeoff last year? The AC was struggling in a smoke-filled cockpit to keep the bird in the air and couldn't find the field. Would you have thought to give the guy a range and bearing to the airfield from the ASN-24? Or would you have sat there quietly thinking he's got enough problems without you jabbering on interphone?

"Shyness and safety don't mix, Bill. I'm not saying that you should be a motor-mouth, giving the pilot your own brand of GCA, but when you see something wrong, tell somebody. And don't expect credit when you're right. I mentioned all those accidents that I thought were navigator-preventable—what about the accidents that *have* been prevented by a brother Magellan? A corrected heading or altitude? A terrain warning heeded? You don't hear much about that kind of thing, do you? But that's understandable—you don't expect a young AC to fill out a hazard report saying he would have crashed if it hadn't been for a warning from his lost-and-found department. I've had a few personally say thanks in private, but only one or two have told anyone else."

"Okay, okay," Bill raised his hands. "I'll get into FLIP and SID's and start paying attention."

"How about missed approach instructions? Do you copy them down? Could you read them off the plate for the pilot who's got his hands full of airplane, in darkness and crappy weather? That's when he really needs help."

"Well, I guess so."

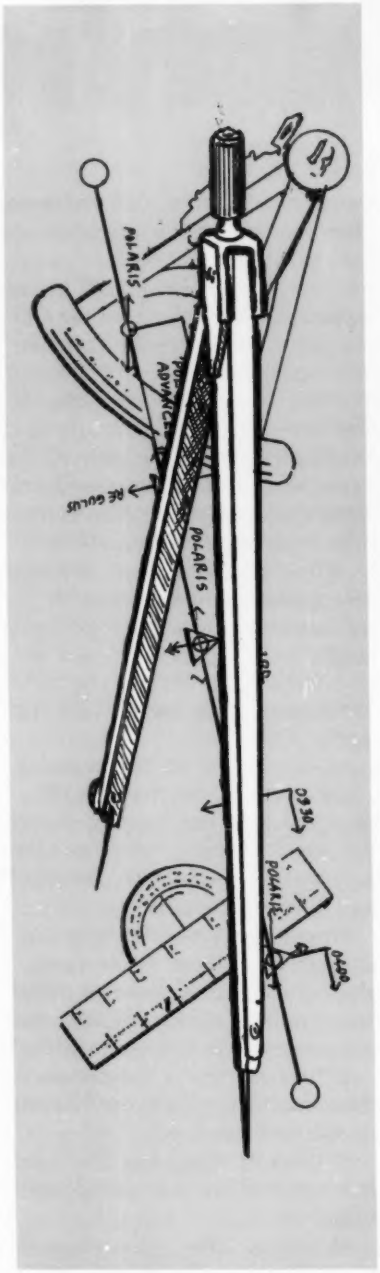
"And do you cross-check fuel figures on the engineer's form 52? The guy is only human. And do you monitor fuel flow and optimum altitude? Here's where you can really get burned. Suppose you have to figure an overfly or diversion to a distant alternate. I'd want to be able to say yea or nay with total confidence."

"You sure make a hell of a lot of work for yourself, Jim."

"It's worth it to me, because I *know* what's going on. And I know I'll be around to collect my per diem and retirement checks. So, you see, it's personal with me. I'd hope every crewmember felt that way about his position. Am I getting through?"

"Yeah," Bill smiled and stood up. "No per diem on final tomorrow. I think I'll apply for a full-time job. Think I can qualify?"

"Sure," Jim grinned. "Sure."



GLOBAL NOTES

Weather Units Win Awards

The American Meteorological Society announced the winner of its Special Award for 1977: Det 4, 7 WW, Altus AFB, Oklahoma, in the heart of "tornado country." The unit's constant advisories during the multiple tornado outbreak of 20 May in southwestern Oklahoma enabled civil authorities to alert the local populace in sufficient time to avoid death and serious injury.

The Department of Commerce named three Keesler AFB, Mississippi, units as Public Service Award winners in recognition of their services to the public safety and welfare: 53 WRS, 920 WRG (AFRES), and Det 5, HQ AWS. The units were cited for the accurate and timely data they had provided during weather reconnaissance missions. These crews flew nearly 800 hours in support of the Department of Commerce; 70 flights were into the very heart of tropical storms and hurricanes. In 1976 the units logged 931 hours. In the two years, not a single fix requirement was missed. The award is a joint tribute by the Department of Commerce, National Oceanic and Atmospheric Administration, and National Weather Service.

5,000,000-Hour Milestone

Since April 1965, when the first operational C-141 was delivered to Travis AFB, California, MAC aircrews have flown Starlifter aircraft over 5,000,000 hours. A plaque commemorating this aviation milestone was presented to General William G. Moore, Jr., MAC's Commander in Chief, by Lockheed-Georgia Company, manufacturers of the aircraft. Fully operational since 1968, the C-141 Starlifter is the workhorse of MAC's strategic airlift force. It was the first purely jet aircraft specifically designed, engineered, and built to meet military standards as a troop and cargo carrier.

15,000 Hours

Seven aircrewmen have been awarded 15,000-hour patches for accident-free flying. Together with the patches, these four men recived commendation letters from General Moore congratulating them on their accomplishments.

Joining the one percent of MAC aircrewmembers who have attained 15,000 hours are Lt Col Vernon E. Baldeshwiler, 187 TAS (ANG), Cheyenne Muni Aprt, Wyoming; MSgt Alma L. Baker, 710 MAS(Assoc), Travis AFB, California; SMSgt Floyd C. Brooks, Jr., 41 MAS, Charleston AFB, South Carolina; SMSgt Harold A. Edvalds,8 MAS ,McChord AFB, Washington; MSgt Vernon G. Richards, 86 MAS, Travis AFB; SMSgt DeWhitt G. Sizemore, 76 MAS, Charleston AFB; and SMSgt James L. Smith, 3 MAS, Dover AFB, Delaware.

MAC Crew Named Mackay Winner

The Mackay Trophy is presented annually to an Air Force person, persons, or organization for the "most meritorious flight of the year." The 1977 trophy was presented to a C-5 crew from the 436 MAW, Dover AFB, Delaware, for their nonstop flight from Chicago's O'Hare International Airport to Sheremetyevo Airport, Moscow, in June. Capt David M. Sprinkel, aircraft commander, and his crew airlifted a 40-ton, superconducting electromagnet and 45 tons of support equipment, together with 20 personnel, to the Soviet Union. The mission, which included two aerial refuelings en route, was the longest flight in the history of aviation for the size and weight of the payload. Air Force Chief of Staff David C. Jones presented the award and cited the MAC crew for overcoming a multitude of problems while in flight. (See "Special Delivery for Moscow" in *TMF*, January and February 1978.)

Power To Spare

Using less than maximum power for takeoff is a great idea—most of the time.

by Capt Bruce L. Gumble
Associate Editor

When the reduced-thrust takeoff procedures for MAC airplanes were first published, there was a lot of head-shaking. Typical comments were, "I just don't like it—I want all the power I can get," or "What happens if we lose an engine—are the charts any good? Can we still get airborne?"

A lot of the skepticism came from long-standing tradition. Many of us started our flying careers in piston-engined airplanes; generally speaking, the only acceptable power setting for takeoff in a recip was "all you can get." Even the folks who have never flown anything but jets remember the T-33 or T-37 as being anything but overpowered. And watching a grossed-out KC-135A taking off on a hot day doesn't inspire a lot of confidence in the power of the jet engine.

But things have changed considerably since those airplanes first flew. Years ago, the commercial airlines recognized that having a critical field length of less than half the runway available was an expensive luxury—expensive because the engine hot-section temperatures encountered at maximum thrust took their toll in engine life and reliability. Why not accept an extra thousand feet or so of critical field length with the possibility of doubling engine life and reducing premature engine failures significantly?

The idea worked. Some airlines found their engine maintenance costs dropping by as much as 50 percent with the use of reduced-thrust takeoffs. MAC adopted the idea several years ago, and the reduced-power takeoff has been with us ever since.

But any procedure can have its drawbacks, and this one is no exception. As so often happens, it's not the procedure itself that's at fault, but the way it's applied. We mentioned earlier that the tradition of using all the power available led to doubts about the effectiveness of a reduced-power takeoff. That same sort of mental "set" can produce just the opposite reaction: a tendency to think of the reduced power setting as a maximum, with dire consequences in store for those who exceed it.

Several years ago, a jumbo jet

failed to get good altitude during a reduced-power takeoff and settled in off the end of the runway. No, the lower power setting wasn't responsible; the crew had neglected to extend the leading-edge slats. But the airplane could have kept flying—*if the crew had thought to shove the throttles up to the max power setting*. They didn't, and the result was a major accident.

Another story, thankfully with a happier ending, was related to one of *TMF's* editors by a C-141 crew. They were making a heavyweight, reduced-power takeoff from an overseas base. The Starlifter's acceleration seemed a little sluggish and finally, as the 2,000-feet-remaining marker passed, the IP in the jump seat reached up and firewalled the throttles. The airplane got off the ground just before the departure-end overrun. This time, the culprit was an unreported wind shift; instead of a headwind, the crew was fighting a 14-knot tailwind.

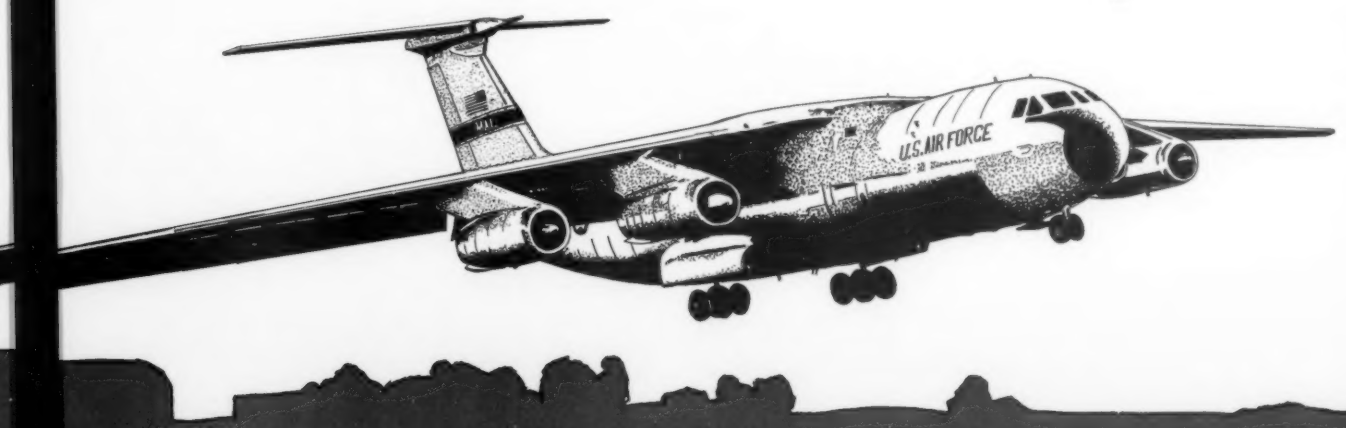
The point of all this isn't that reduced-power takeoffs are unsafe; they're not. As long as you're careful with your takeoff data computations, a reduced-power takeoff will provide all the performance you'll need. But there are plenty of things you can't plan for that could turn that ordinary takeoff into a bucket of worms; windshear, misweighed cargo, and multiple engine failure are some real-life examples. And these things apply to *any* takeoff, not just the reduced-power variety.

Last year a commercial 727 hit severe windshear on takeoff roll. The airplane rotated, but wouldn't come off the ground; the captain firewalled the throttles and the trijet finally got airborne. It took out some power poles and lines, but the crew brought it back around for a safe landing. And two C-141's are still in the inventory because their pilots didn't hesitate to use all the power they had—one during a full nose-up pitch trim runaway, the other after losing two engines on one side just after liftoff. In each of these three cases, none of the overboosted engines failed.

We constantly fly our aircraft within carefully established limits—airspeed, altitude, power settings, bank angles, and so on. There are very good reasons for those limits, the primary one being that they represent the maximum performance necessary for normal operations. And that's what a reduced-thrust takeoff is: a safe way to accomplish a normal operation, with the extra added attraction of economy and greater engine reliability.

But normal, routine operations lead to normal, routine thinking; when things turn sour, the responses that apply to an ordinary situation may no longer be enough. When a takeoff suddenly changes from "Ho-hum" to "Omigawd!" how long will it take you to remember just how much more performance you can squeeze out of your airplane? Could you amend your takeoff briefing to include, " . . . a reduced EPR takeoff, but let's remember we've got a lot more EPR's if needed . . . "

Think about it. It might keep you from getting caught during that one time in a thousand when you don't really have power to spare.



Standing: Maj Patrick S. Boab, Capt Eugene R. Andreotti, Maj Donald C. Coban.

Kneeling: MSgt Loren G. Stahmer, Jr., SSgt Gerald F. Malik, TSgt Marcus J. Haeg.

One of the corollaries to Murphy's Law says that things never go wrong one at a time. Here's a story about an Air National Guard crew and the way they handled trouble when it started coming in bunches.

Maj Patrick S. Boab and his crew from the 109 TAS, Minneapolis-St. Paul IAP, Minnesota, were number three in a three-ship flight of C-130's on a downwind recovery at Yuma MCAS. The first indication of trouble was a number one hydraulic low-pressure warning light. Captain Andreotti, the co-pilot, confirmed that the booster system was losing pressure; from the cargo compartment, Staff Sergeant Malik reported that the booster system reservoir was empty. Then, as Major Boab turned the Hercules onto base leg and called for gear and flap extension Master Sergeant Stahmer reported that the utility system pressure was also dropping rapidly.

Anticipating a loss of all hydraulic assistance to the flight controls, Major Boab rolled the aircraft wings-level and called the first two aircraft in the formation, asking them to go around so the full length of the runway would be available. Major Coban called the tower and received landing clearance.

Meanwhile Sergeant Malik was trying to get the cap off the utility system reservoir so it could be serviced. The cap was too hot to handle, but Tech Sergeant Haeg managed to get it loose with a crash axe; smoke and fumes boiled out of the reservoir as the cap came off. The two loadmasters then found another use for the crash axe—opening cans of hydraulic fluid to dump into the reservoir.

While the loadmasters were reservicing the utility system, Major Boab was trying to get the 130 lined up on final. The controls were sloppy and slow to respond. Not wanting to roll the aircraft into a bank, Major Boab skidded the Hercules around the turn to final with rudder and differential power.

By the time the crippled bird reached the threshold, Sergeants Haeg and Malik had gotten about two gallons of fluid into the utility system; there was enough elevator response to flare the aircraft, although it took a lot of control column movement.

Reverse thrust and emergency brakes got the airplane stopped—and then it began listing to the right. Concerned about a possible gear collapse, the crew shut down the engines and departed the area.

Investigation showed that four independent, nearly simultaneous failures had teamed up to cause the incident: two broken hydraulic flare fittings, a bad pressure switch in the number three hydraulic pump, and a collapsed gear strut.

Major Boab and his crew displayed some expert handling and lots of talent in this hairy one. "Good Show!"

Flight Lines

The MAC Non-Flyer?

I just read the April 78 edition of *The MAC Flyer*. I may have enjoyed reading it more—and become better informed—had I been *able* to read it. The publication is so full of jargon, how in the world is a nonflyer like me to be able to understand what you are trying to put across?

Some examples: What is a PJ? An ILS approach? A climb from FL 350 to FL 390? Also, is a "CB" a citizen band radio? If so, what are its "hazards"? What is AGL? What is an L-1011?

How about giving us nonflyers a break and write in plain English?

TSgt Melvin Stober
63 MAW
Norton AFB, California

★ You're right about us not writing in "plain" English—we try to write in "plane" English. (No pun intended.) Our publication, aimed at the MAC flyers as the name implies, is the flying safety journal of MAC and therefore, filled with many esoteric, ethereal words. Check our January issue, page 5; it should give you an idea of our operating charter. TMF, however, isn't an aviator's-eyes-only pub; from it you supporters can get an idea of the operational side of the command. We do appreciate your interest.

Ici Is Here

Your April 1978 issue has helped us immeasurably. *The Sage Brush* cartoon humorously illustrates that weather people have a rough time making the atmosphere cooperate with our prognoses, and we have tried numerous ways to solve this problem. Thanks to C.R. Terror (same issue), we now have an insight into this problem. As the Flatulent Philosopher stated: "Worn-out air is what's responsible."

Capt Michael Sotak
HQ 7 WW
Scott AFB, Illinois

As President of the Norfolk Chapter of the Navy Helicopter Association, I wish to express our appreciation for allowing us to reproduce the "Helicopter Pilots Are Different" feature which appeared in the July 1977 issue of *The MAC Flyer*.

Please congratulate the artist, Captain Ed Cooke, for his outstanding work.

LCDR Howard A. Wheeler, USN
Norfolk, Virginia

★ We've relayed those words to Ici and he muttered something more or less equivalent to "Thanks." The Sage Brush is a definite winner according to comments it has drawn from our readers and we're mighty proud to have contributing artist Captain Ed Cooke on board.

ROLL OF

AS OF 31 DECEMBER 1977

MAC UNIT FLYING-HOUR MILESTONE AWARD

650,000 HOURS

76 MAS

400,000 HOURS

14 MAS
41 MAS
75 MAS

350,000 HOURS

6 MAS
7 MAS

300,000 HOURS

3 MAS
4 MAS
30 MAS

250,000 HOURS

86 MAS

200,000 HOURS

53 MAS
57 MAS

150,000 HOURS

446 MAW (Assoc)

100,000 HOURS

9 MAS
22 MAS
54 WRS
55 WRS
375 AAW

HONOR

MAC UNIT ACCIDENT-FREE FLYING YEAR AWARD

25 YEARS OR MORE

64 TAS (AFRES)
76 MAS
303 TAS (AFRES)
327 TAS (AFRES)
355 TAS (AFRES)

20 THROUGH 24 YEARS

1 HS
6 MAS
14 MAS
96 TAS (AFRES)
183 TAS (ANG)
312 MAS (Assoc)
704 TAS (AFRES)
731 TAS (AFRES)

10 THROUGH 19 YEARS

3 MAS
4 MAS
7 MAS
22 MAS
30 MAS
Det 1, 39 ARRW
Det 10, 39 ARRW
Det 11, 39 ARRW
Det 15, 39 ARRW
Det 18, 39 ARRW
41 MAS
Det 5, 41 RWRW
Det 22, 41 RWRW
53 MAS
53 WRS
54 WRS
55 WRS
55 ARRS
57 MAS
63 TAS (AFRES)
68 TAS (AFRES)
73 AAS (Assoc)
75 MAS
95 TAS (AFRES)
97 MAS (Assoc)
105 TAS (ANG)
137 TAW (ANG)
142 TAS (ANG)
143 TAS (ANG)
144 TAS (ANG)
156 TAS (ANG)
164 TAS (ANG)
301 ARRS (AFRES)
303 ARRS (AFRES)
305 ARRS (AFRES)
328 TAS (AFRES)
337 TAS (AFRES)
403 RWRW (AFRES)
440 TAW (AFRES)
445 MAW (Assoc)
459 TAW (AFRES)
728 MAS (Assoc)
730 MAS (Assoc)
756 TAS (AFRES)
758 TAS (AFRES)
932 AAG (Assoc)

The Bear and the Boy

(continued from page 5)

for another thousand feet and then struggled into the air.

"Gear up!" commanded the AC, convinced the aircraft was firmly airborne.

"Roger, gear up," responded the copilot, raising the gear handle. What a pig! he thought to himself.

As airspeed increased, Danny carefully raised the flaps. With a safe altitude attained, King 22 started a slow turn. The first inkling of sunrise was working its way through the morning haze.

"Radio operator—pilot, what's the status of Jolly 26?" the AC inquired.

"Sir, he's got number two shut down and losing fuel pretty fast. From what I can make out from the HF traffic, he got the hell shot out of him during the pickup. Jolly 27 is okay. Both survivors—" Sergeant Mountain paused in mid-sentence as he hastily scrawled something into his radio log—"both survivors and the crew are okay. King 21 wants you to come up Victor 138.45," continued the RO.

"Okay," replied The Bear, dialing the frequency into the number one VHF. "King 21, this is King 22 on Victor."

"Rog, 22, are you up for a little air refueling?"

"You bet! I understand Jolly 26 took a few hits in the hover."

"You might say that," commented a new voice over the airways. "We're losing fuel at a pretty good clip from the belly. What we'd like to do, King 22, is rendezvous with you to make sure we have enough gas to make Udorn. Can you handle that?"

"No sweat, Jolly. Say altitude and airspeed," inquired The Bear as Danny reached for his parachute harness thinking what a pain it was to wear.

"We're holding 85 knots at 3,500 feet. Break. King 21, we'll work with 22 the rest of the way home. Thanks for your help."

"Any time, Jolly. Have a nice trip and don't get hurt in downtown Udorn," said the AC of King 21.

King 21 signed off and returned to his orbit position as King 22 made ready for the upcoming refueling. The navigator worked feverishly plotting an intercept course and refueling track to use with the Jolly, avoiding known enemy locations. The engineer was studying the air refueling data section of the performance charts.

"Sir, our MOS will be 93 knots," the engineer said as he copied the figure into the operational data card and handed it to the AC.

MOS? Minimum Operational Speed? thought Danny. That's right. When the helicopter is on one engine, the tanker has to fly slower than normal to refuel. I haven't flown at MOS since my initial qual training at Hill, but I recall the airplane gets real mushy.

"Danny," said The Bear, breaking the copilot's thought process. "When we slow down to MOS, I want you to watch the airspeed like a hawk. Ninety-three is only a few knots above a stall."

"Roger that!" replied Danny with a rare burst of enthusiasm.

The aircraft continued on their respective paths, each eagerly anticipating the sight of the other. Checklists were accomplished, radio calls were made, and equipment was readied. The sprawling jungle below was deceivingly peaceful.

"King, we have a tally-ho. We're about your ten o'clock, five miles," announced the number one VHF. "We're heading 190 degrees, still holding 85 knots at 3,500."

"Tally-ho!" replied The Bear. "We're departing 4,000 and maneuvering for your six o'clock, Jolly."

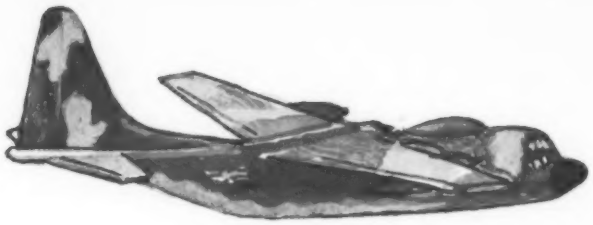
The Bear banked hard left and then hard right. He retarded the throttles to flight idle and started a descent to 3,000 feet. One last turn to the right put the tanker in trail with the receiver.

"Flaps—50 percent," ordered The Bear.

"Flaps coming 50," responded Danny.

"Jolly, we're two miles at your six, level at three," The Bear informed the helicopter formation. He glanced at Danny and called for the "contact" checklist.

Jolly 26 was about a mile and a half ahead and 500 feet above the tanker. Jolly 27 was flying a wide left fingertip and slightly above 26. King 22's flaps came to 70 percent and, as the Herk slowed through



120 knots, the two refueling hoses snaked their way from the wing pods.

"We're one mile in trail, Jolly," The Bear informed the receiver.

The King Bird's airspeed continued to decrease. Through 110. Through 105. Danny could see his AC's eyes moving back and forth from the airspeed indicator to the helicopter. At about 95 knots, The Bear applied power. Experience proved itself and the airspeed stabilized at 93. "One-half mile in trail, Jolly," called The Bear.

"Roger," came the immediate response.

The cure was about to become worse than the problem.

As the tanker approached the Jolly's three o'clock, The Bear spent most of his time watching the helicopters with an occasional glance at the airspeed indicator. Ninety-three knots was wired and everything was proceeding by the book. With both the AC and flight engineer watching the progress of the joinup, the only eyes to see the number one engine T-handle flash belonged to Danny Schultz. Turbine overheat. The cure was about to become worse than the problem.

"Number one!" shouted Danny into the interphone.

As The Bear and Sergeant Bronson snapped their attention to the engine instruments, Danny grabbed the number one throttle and pulled it to flight idle. The flashing light extinguished, but the left wing of the big bird dropped like a rock and the aircraft nosed over. The Bear countered with hard right aileron. The left roll stopped at about 60 degrees as the nose continued downward. Numbers two and three throttles were against the firewall. The engineer had already reached up, flipped the bleeds off, and started to retract the air refueling hoses to decrease the drag.

"What the hell's wrong with number one?" hollered The Bear as he tried without success to coax the 130 back to a level and upright attitude.

"We had a turbine overheat in number one," responded the co-pilot with a corresponding degree of anxiety in his voice.

With only a moment's hesitation, The Bear slowly pushed the outboard throttles forward. The aircraft responded; airspeed began to increase and the left wing started up. The tanker was controllable again, but barely.

"Sir, the turbine overheat light is flashing again," cried Danny, fearful of a repeat performance.

"I see it," responded The Bear, his voice somewhat calmer now. "Just don't touch anything."

Danny sank back into his seat. The Bear was one of the easiest guys in the world to get along with, but by the tone of his voice, Danny knew he had done bad, real bad.

"King, what's going on? Are you in trouble?" It was Jolly 26.

"No, we're okay now. We lost power on number one engine for awhile," replied The Bear. "We need to accelerate on out of here and take care of our problem. We'll get back with you in a few minutes. Just keep pressing for Udorn."

"Rog," replied the Jolly.

The tanker continued to accelerate as the crew ran the post-air-refueling checklist. As the airspeed passed 150 knots, The Bear slowly retarded the number one throttle until the blinking turbine overheat light went out. He trimmed the aircraft and stabilized the airspeed at 180 knots. Danny didn't say a word as The Bear started a slow turn to the right.

"Jolly 26, King 22."

"Go ahead, King."

"Yeah, Jolly, can you do me a favor? Take a good hard look at your gas situation. Can you make Udorn without refueling?" asked The Bear.

"Just a minute, King. Let us take a look at it," the receiver answered.

A call to the loadmaster in the cargo compartment revealed he was no worse for wear, although he admitted to having had passing thoughts of bailing out. The Bear rolled out of the turn and spotted the two helicopters. He could feel his pounding heart finally starting to slow down.

"King 22, Jolly 26."

"Go ahead, Jolly."

"Rog, King, our flight mech has looked pretty

close at the charts and it looks like we'll be able to make it. If not Udorn, we'll at least make the fence," Jolly 26 informed the King Bird. "Are you having serious problems?"

"No, nothing serious, Jolly. We've got number one running at about one-third the power of the other three and I don't want to slow down for refueling if I don't have to," The Bear explained.

"We can relate to bad engines," the pilot of 26 quipped. "Can you stay with us until we get down?"

"Sure thing, Jolly, we'll walk you home," answered The Bear.

Danny was stretched out on his pad, arms wrapped firmly around his pillow, with his eyes riveted to a spot on the ceiling. He couldn't remember a time in his life he had felt this bad. The reality of his actions was insurmountable. He had made a mistake, a mistake that could have been disastrous. Hardly a word had been spoken by anyone during the return flight to Korat. Outside his room he could hear the nightly card game start to crank up.

Danny's fixed stare was broken by a knock on his door. For a moment he lay motionless, weighing the disadvantages of answering it, but the loneliness was too much.

He reached for the doorknob, wondering who would be on the other side. As the door opened, it revealed the burly figure of The Bear, clad in his normal cutoffs and sandals. Danny was speechless.

"Can I come in?"

Without a word, Danny opened the door further and stepped aside. The Bear walked in and set a prized possession on the desk—a six-pack of Coors. He extracted a couple of cans, opened them, and handed one to his copilot.

"Thanks," Danny managed to say.

The two sampled the brew. Then The Bear pulled up a chair, sat down, and leaned back. Danny moved slowly to the edge of his bed and sat down, not sure of what would happen next.

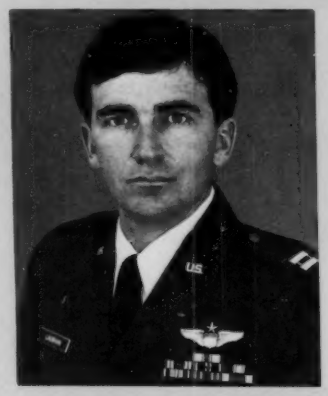
"Danny, I think we need to talk about your attitude and today's performance," The Bear said in a fatherly way. "We had a ton of experience on the flight deck this afternoon and you didn't use an ounce of it."

Danny agreed with a slight nod of his head and for the rest of the evening the discussion moved from crew coordination to aircraft control to judgment and on through a broad spectrum of subjects.

Here's a guy I almost killed this afternoon, thought Danny. How can he even talk to me?

Later that night as he dozed off, Danny tried hard to understand The Bear.

The next day a shipment of amplifiers came in.



ABOUT THE AUTHOR

Captain Laubhan is the big winner in this year's writing contest. He entered the Air Force in 1969 through OTS after completing his bachelor's degree at Loyola University, Chicago, Illinois. After pilot training, he was assigned to Korat RTAFB, Thailand, as an HC-130 pilot. Captain Laubhan became an HC-130 instructor pilot with the 1550th Aircrew Training and Test Wing in 1974. He just completed his master's degree at the University of New Mexico and is a standardization pilot with the 1551st Flying Training Squadron at Kirtland AFB, New Mexico.

Mishap With a Moral

"We've lost both engines. . . "

Just before 1600 EST, Flight 222 was ready to depart Huntsville, Alabama, with 81 passengers and 5 crewmembers aboard. As a rainshower splattered the ramp, the pilots checked their weather information. They had weather reports from selected stations along their route from Muscle Shoals, Alabama, through Huntsville, to Atlanta. And the dispatcher at Muscle Shoals had handed them two tornado watches and two sigmets that called for scattered to numerous thunderstorms with hail, high winds, and cloud tops between 40,000 and 58,000 feet over northern Alabama and Georgia. Things hadn't looked too bad on the trip into Alabama two hours earlier; they had seen the expected afternoon scattered cumulus clouds—tops about 19,000 feet.

Flight 222 was cleared from Huntsville to Rome VOR with a profile descent into Hartsfield-Atlanta International. The first officer flew the DC-9 off the runway at 1554 EST and the captain contacted departure control. Huntsville Departure gave 222 vectors around a restricted area, cleared them direct to the Rome VOR and handed them off to Center. The captain used the aircraft radar to pick a way through the rainshowers. The airliner was cruising in the clouds at 17,000 feet and encountered turbulence, so the left-seater ordered the pilot to slow it up. Rain streamed across the windscreen.

The 1600 weather sequence from Rome included ". . . thunderstorm, light rainshowers . . . continuous thunder southwest through northwest." A tornado was reported moving from southwest to northeast near the Rome VOR. At 1601 the Athens, Georgia, weather station reported a group of thunderstorm cells centered 15 miles west of Rome, the tops of the cells were over 51,000 feet. None of this information was available to the crew of Flight 222.

The pilots studied the aircraft's radar picture. "See that," the captain pointed to a black hole ringed by a bright return. "Looks heavy. Nothing's going through that."

The first officer asked, "You want to go around that now?"

"Hand fly at about 285 knots," was the reply.

The airline's operating rules state, "During periods of icing, hail, thunderstorms, turbulence . . . a flight may deviate from the approved route to the extent necessary to circumnavigate such conditions."

As Flight 222 approached the storms, heavy rain

and hail pelted the airplane. A passenger saw lightning strike the left wingtip. The first officer asked, "Which way do we go across here? I don't know how we're going to get through here."

"I know," the captain responded. "We're just going to have to go out the best way we can." Looking at the radar scope he spotted what looked like a hole between the thunderstorms and told the pilot to take the airliner through it.

The DC-9 was equipped with an X-band radar that's similar to many Air Force sets. The manufacturer's handbook, used as a training guide by the airline, advises aircrews to avoid heavy precipitation by at least ten miles. Also, severe rainfall near the radar antenna disperses the beam and reduces the radar's performance.

Atlanta Center cleared Flight 222 to descend to 14,000 feet and the pilot retarded the power to near idle. The engines were taking in heavy rain and began to lose rpm; the generators dropped off the line. The first officer advanced the throttles —a natural reaction to declining rpm—and the turbofans began to surge and stall. Engine speed came up enough to get the generators back on the line, but the compressors were severely damaged.

The power loss and rough weather were enough to cue the cabin crew that things were not going well. Without any word from the cockpit, the aft-cabin flight attendant took the initiative. "Please check to see that all carry-on baggage is stowed . . . in the unlikely event that there is a need for an emergency landing assume the crash position by grabbing your ankles. Thank you for your cooperation and just relax; these are precautionary measures."

The crew's problems were suddenly compounded by the crackling sound of a breaking windscreen. Seconds later the first officer exclaimed, "Left engine won't spool up!"

The captain told the controller and the flight was cleared down to 13,000 feet. A few seconds later the right-seater gasped, "My God, the other engine's going too!"

Atlanta Center issued vectors toward a clear area and told Flight 222 to contact approach control for

Aftermath of the DC-9's encounter with severe weather.

an emergency straight-in to Dobbins AFB. The engine generators dropped off the line—the batteries supplied emergency power.

The DC-9 broke into a clear area among the cumulus clouds and the pilot made a right turn, away from Dobbins, in an attempt to remain in VMC. The cockpit crew worked feverishly to get the engines started. After two and a half minutes, they got the APU running and restored normal electrical power to the descending airliner.

In the aft cabin the flight attendant asked the passengers to check that their lap belts were securely fastened. She rang up the forward flight attendant and asked if she knew what was happening.

"They wouldn't talk to me," was the frustrated

NTSB Photo

reply. "When I opened the door I could see the whole front windshield is cracked. They just told me to sit down so I didn't ask anything." This was the only information from the cockpit that the cabin crew had; they prepared for a crash landing.

As they passed 7,000 feet the captain told approach, "All right, we've lost both engines and I can't tell you the implications of this . . . how far is Dobbins now?"

"Flight 222, Dobbins is 19 miles."

When the altimeter showed 4,600 feet, the first officer warned, "I don't think we can make that. See if there's anything closer."

A few seconds later the approach controller offered a slight hope. "There's Cartersville; you're about ten miles south of there, and 15 miles west of Dobbins."

But the captain knew it was too late and their altitude was too low. "We're going to have to go like we are. I'm picking the next clear area."

"You've got to find me a highway," insisted the first officer.

"I see a highway over there."

"We'll have to take it."

The flight attendant saw treetops outside the window and screamed, "Bend down and grab your ankles!"

The DC-9's wings struck trees and power poles along the state highway, and seconds later the left main gear touched the roadway. Simultaneously, the left wing hit an embankment and swung the airliner to the left. It departed the road and struck signs, trees, and the gasoline pumps at a gas station. The fuselage broke into five parts and the empennage separated from the aircraft. Fire engulfed the wreckage aft of the wings.

Flight 222 had encountered what the National Weather Service later described as the ". . . most severe storm . . . in the United States in the last three years." Twenty-one passengers and the two flight attendants survived the crash.

The NTSB determined that the probable cause of the accident was ". . . the total and unique loss of thrust from both engines while the aircraft was penetrating an area of severe thunderstorms . . . caused by the ingestion of massive amounts of water and hail, which in combination with thrust lever movement, induced severe stalling in and major damage to the engine compressors."

One board member dissented saying, ". . . I would state the probable cause as the captain's decision to penetrate rather than avoid an area of severe weather, failure to obtain all available weather information despite having prior knowledge of [its] severity, and reliance on airborne radar for penetration rather than avoidance . . . ."

—Adapted from NTSB-AAR-78-3

Deja Vu*

*(day-zha-voo), [Fr. lit., already seen], the illusion that one has previously had a given experience.

McChord AFB is 34 miles northwest of Mount Rainier (14,410 feet) and 51 miles southeast of Mount Olympus (7,965 feet). These giants are typical of the spectacular mountains of the Northwest that nearly surround the base. Predictably, the minimum safe altitude within 25 miles is 7,100 feet. Also characteristic of the region, McChord's precipitation averages about 37 inches per year. The worst months for flying are November through January when the weather is below 1500 and 3 over 25 percent of the time and precip falls during 18 days each month.

A variety of instrument approaches are available to runway 16/34 (10,100 by 150 feet), and there are approach lights and VASI on both ends.

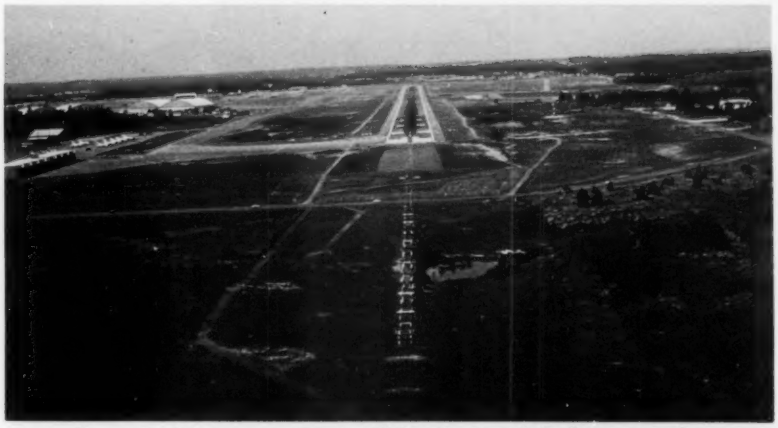
If you follow the approach procedures you'll stay clear of the terrain, but good weather brings other hazards aloft. VFR aviators abound; there are over 25 airports in the Seattle-Tacoma area. Fort Lewis artillery range and Gray Army Airfield are about five miles southwest of the base, and helicopter assault training is occasionally conducted under the approach course to runway 34.

Rain or shine, traffic and terrain make defensive flying a must near MAC's base in the Great Northwest.

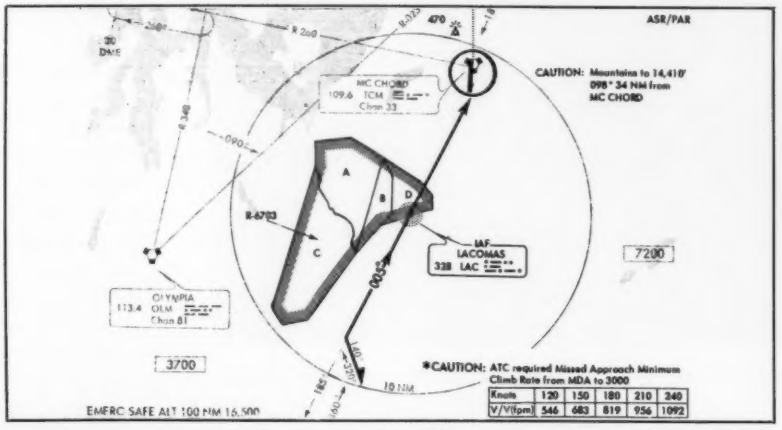
—Adapted from ISD-Q6-453

McChord AFB

Washington
(Elevation 322 feet)



One mile on final for runway 34. Parallel taxiway at left slopes steeply; use is restricted when RCR is four or less.



R-6703, shown in red, is the Fort Lewis artillery range; McChord approach control issues advisories.

Final approach to runway 16 is over residential area; the airfield complex is to the right.

C.R. TERROR

The Ace of Airdrops delivers the goods—to the wrong address.

"Okay, listen up for the briefing." The Ambient Airdropper glanced at the pilot/loadmaster briefing checklist as Ty Downs and a student loadmaster listened attentively. "Lessee—route and weather. We're going to the Muckenmire DZ via the usual route with the usual weather. Load and drop sequence—we'll drop the last pallet first and the first pallet last. Umm—TOT's—there'll be some. Lemme see—" A pudgy digit traveled down the length of the checklist as C.R. muttered almost inaudibly about manifests, weight and balance, and so on. The two loadmasters exchanged knowing glances.

"—and there won't be any malfunctions but if there are be sure you open the doors before you jettison. Any questions?" Without waiting for an answer C.R. turned and clambered up the ladder to the Starlifter's flight deck. The loadmasters shrugged and went to recheck the rigging of the five heavy pallets.

Minutes later, the Ace of Aerospace and his faithful sidekick had the TF-33's cranked up; Dud 13 was ready to taxi. C.R. had been using the interval between engine start and taxi time to regale Sam, Blinky, and Sergeant Torque with stories of his airdrop experiences in C-124's.

"... so what did we find three miles east of the DZ? A nudist camp, that's what! We made about 15 racetrack patterns that day, all at 150 feet. You never saw so many bare—"

"Uhh, sorry to interrupt, Boss, but we've got 15 seconds to taxi time," Blinky cut in.

"Gotcha, Blinky," the Rotund One replied. He pressed the throttles forward. "Gimme a good count; we'll show those IG weenies what precision timing is."

"Wait a minute, sir," Sam protested. "We were supposed to—"

"Hush, Sammy, you'll spoil my timing," C.R. scolded. Then, on Blinky's count, he snapped his feet off the brake pedals. The 141 lurched out of the parking spot, scattering marshallers, and turned briskly in behind the aircraft ahead.

"Boss," Sam groaned, "I tried to tell you—that's lead! We were supposed to wait for number two to go by and swing in behind him."

"Hmmm," the Master Manipulator mused, "I don't seem to re-

member that from the briefing. Well, no problem; we'll just turn off at the next-to-last intersection and let Two go by, then take off from there."

Minutes later, C.R. and company were facing the runway at the 6,000-foot-remaining marker, watching Dud 12 on takeoff roll. "Gnorton Tower, Dud 13," the Paunchus Pilot transmitted, "we're ready to roll as soon as number two's airborne."

"Sorry, sir, we can't approve intersection takeoffs," Tower replied. "You'll have to wait until the other four elements get off and then taxi down the runway."

"Oh, no," moaned Sam, "that tears it. Not only do we buy a late takeoff, but we'll never catch the first element by the time they hit the DZ. Can you imagine what the Old Man will say if we bust his ORI for him?"

"No sweat, m'boy," C.R. shot back. "One late takeoff does not an unsat make, and with my superior knowledge of low-level tactical flying we'll tuck right into place before Lead's found the last Texaco station. Watch and learn, Sammy."

Sam gazed out the window nervously as the ground sped by some 200 feet below. He glanced at the airspeed indicator: 375 knots. He shuddered and went back to watching for traffic. Sam wasn't particularly concerned about other airplanes at this altitude, but powerlines and high-jumping jackrabbits were definitely on his mind.

Blinky was also feeling a little insecure. Map references were scarce, and he hadn't really been sure of their position since C.R. started what he called his "tactical shortcut." He thumbed his mike button. "Ahh, Major Terror—are you really sure you know where we are?"

"Blinky, m'lad, how can you doubt me?" queried C.R. "Surely you remember my sterling performance during Led Frag. Never fear—we'll cut 'em off at the pass."

Sam was still watching the sky ahead of the Gray and White Rocket. "Looks like you're right, Boss—there's a flight of three at ten o'clock and another one at about your one-thirty."

"Yahoo!" the Tactical Terror chortled. "I toldja so, Sammy—we got all kinds of time. Blinky, run the ten-minute checklist. Sam, stand by for the world's greatest tactical rejoin." C.R. racked the Starlifter into a two-G turn; Sam thought about the distance between the wingtip and the ground and closed his eyes.

When he opened them again, the three airplanes in their 12 o'clock were growing rapidly larger. "Uhh, sir," he inquired in a slightly shaky voice, "don't you think you ought to start a turn to go around these guys?"

"What, and waste all that time?" snorted C.R. "We're at 200 feet, and those turkeys are at 500. That's plenty of separation. Besides, if we come alongside them at this speed they'll think we're a many-motored MiG and have terminal spasms of the gluteus maximus. We'll just sneak by underneath, nice and quiet."

The third airplane of the second element was already passing overhead; soon the other two were behind them and C.R. was drawing a bead on the two ships of his own element. Satisfied with his overtake, he pulled the power to idle—but the rate of closure stayed the same. Then Sam noticed that the lead aircraft was beginning to climb.

"Slowdown! It's the slowdown!" he screamed. "Get the spoilers out, quick!"

"Whaa—" C.R. stammered as he slammed the spoiler lever to the flight limit. "Slowdown? I didn't hear anything about a slowdown. What's going on?"

Sam glanced at the console. "If you'd had the right frequency tuned in, you might have heard the call, sir."

The Great One ignored the comment; he was too busy trying to get the bird slowed down. As they passed number two with plenty of overtake left, C.R. bowed to the inevitable and pulled back hard. The Starlifter shot upward. The airspeed dropped. Lead came closer and closer. C.R. rolled into a right bank to keep the leader in sight. Sam looked out his window—directly onto the top of the lead aircraft.

Then the under - spoiler - speed warning came on, followed immediately by the stick-shaker.

"AAArrgh!" the Bold One bellowed. "Flaps! Gimme some flaps!" He shoved on the yoke and

throttles and glanced at the airspeed indicator, which showed 105 knots. Sam yanked the spoiler handle up and shoved the flap handle about halfway down. The 141 bucked, shuddered, and reluctantly began flying again.

By the time Sammy began to feel confident that his heart was really going to keep beating, C.R. had gotten back into something that resembled a number three position. He was a little close to number two and a little low, but considering the circumstances it wasn't bad. The doors were open and Blinky was staring ahead at the DZ.

"Sir, I don't think I like Lead's lineup," he commented. "We've got a lot of left drift—how about moving us over to the right a little bit?"

"Can do easy," the Master Manipulator replied. The 141 began easing slowly to the right; number two began to look more and more like a tail-on silhouette.

"Sir," Sam cautioned, "I don't think you ought to move over any more. We're just about looking up Two's stacks already; any further and we're liable to get in his wake."

"Nonsense, S a m m y , ' ' C.R. scoffed. There's a crosswind out here—that's why we're drifting. It'll blow all the bad stuff away."

"Uh, sorry sir, but I think you're wrong. You see, the *relative* wind is what—"

"Ten seconds," interrupted Blinky. "Five—four—three—two—one—GREEN LIGHT!"

Sam hit the switches just as Dud 13 hit the wake. Suddenly the horizon was vertical. Once again the cockpit became a bedlam as C.R. and Sam struggled to get the staggering Starlifter upright. Full rudder, full aileron and TRT finally took effect—but not before the Field-Grade Fumbler's horrified gaze had caught the radar altimeter passing through 100 feet. Then they were under control and climbing—but at a 90-degree angle to DZ centerline.

The Great One took time to wipe beads of perspiration from his brow. "Sheesh, Sammy, that was close. What a time to start having flight control problems!"

"Pilot, loadmaster." Ty Downs' voice saved Sam from making a remark he probably would have regretted. "I hate to tell you this, but we've get a hung load."

"Oh, great," C.R. complained. "That's all we need. Okay, I'll level off and we'll take care of it." He shoved forward on the yoke; frustration made his touch a little stronger than usual. There was a thump from the back of the airplane.

"Sir," Ty called, "the pallet's gone."

"Oh, no," Blinky groaned. "Do you guys realize how far off the DZ we are?"

"Blinky, I'd rather not know," the Master Manipulator answered weakly. "Let's go home."

Behind the departing Starlifter, a pallet settled not so gently to earth in the westbound lanes of a four-lane highway. Brakes squealed. Glass tinkled. The driver of a plush limousine stepped out to examine the minor damage to the front of the machine. As he did so, he called back over his shoulder to his passenger.

"You okay, Senator?" he asked.

"What'd command post say, Sammy?"

"Well, three things, sir. First, our parking spot is in front of base ops; there are some people meeting the airplane. Second, our score on the drop was 9 o'clock at a mile and a half." He paused.

"Give it to me, Sammy, I can take it." The Round One's normally ruddy face was a rather pallid shade of green.

"Well—we've got a personal invitation from the wing commander to attend the ORI out-briefing."

Quick Stoppers

RED over WHITE

If you're in the habit of using VASI to check your descent path during the base leg of a visual or circling appoarch, you might be interested in the following information obtained from the FAA by the Flight Safety Foundation: "The visual glide path of the VASI provides safe obstruction clearance 10 degrees left and right of extended runway centerline out to four nautical miles from the runway threshold. . . . the VASI is designed to provide only vertical guidance to a given runway and is not designed to be utilized during circling maneuvers *until the aircraft is aligned with the runway.*" Of course, this is one of those scraps of knowledge that probably won't save your life—except maybe at a strange field, in rough terrain, at night.

Low, Low Approach

Those low altitude go-arounds often cause a little trepidation in the cockpit—and sometimes they scare innocent bystanders, too. The C-141 was taxiing along a parallel taxiway when the crew noticed a C-130 headed their way; the Herk had just finished a low approach, cleared the runway, and was heading west over the parallel. The 130 wasn't accumulating altitude very rapidly—the 141 crew estimated its altitude at about 100 feet AGL—so the Starlifter AC got permission to turn onto the runway and get out of the way. At about the same time, the 130 driver started a turn away from the taxiing T-tail.

Seems the student flying the Brown and Green was trying a three-engine missed approach and had neglected to retract the flaps to 50 percent, making the go-around a little sporty for all concerned.

Short-Field Surprise

Doing a short-field takeoff in the C-130 is usually an interesting break from routine logistic operations; occasionally it can be spectacular. Let's ride along.

The AC briefs the max effort procedures and taxies the Hercules onto the runway. He instructs, "Bleeds off." The engineer complies. The power's set and the Allisons roar. Brake release. Air speed builds. The AC calls, "Pilot's yoke." Passing 85 knots and everything looks good; ready to rotate. Suddenly the Herk yaws toward the grass to the left of the runway. Reject! The AC pulls a handful of throttles to flight idle. Torque on number one is near zero. "Shut down number one!" Done. Throttles two and three come into reverse and the propjet slows. Full deflection on the nose wheel steering, full right rudder and aileron, differential power and braking bring the beast to a halt on the runway. Whew!

An internal failure in the reduction gear assembly had disconnected number one engine from its prop and turned the max effort takeoff into a max perspiration emergency.

Runaway Rolling Stock

There were no pax on board the Starlifter, so the whole crew stayed on the flight deck for takeoff. After they'd passed through about 11,000 feet, the scanner and loadmaster headed for the back—and found that a 14,620-pound air conditioning truck had rolled about ten feet aft from its tiedown point and stopped against a pallet.

They notified the AC of a cargo problem, and he reduced the rate of climb. As he did so, the truck began rolling forward; the scanner opened the truck's right-hand door and climbed in to get it stopped. He did—but not until the open door had done some minor damage to the side of the cargo compartment. The crew resecured the vehicle and landed at destination with no more difficulties.

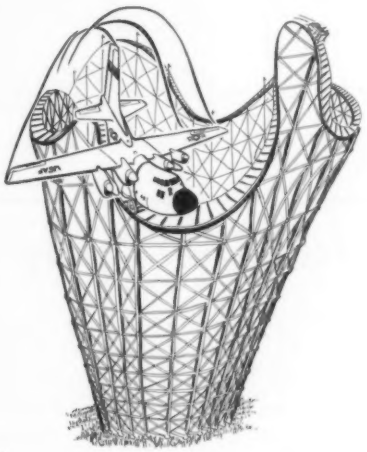
Improper loading procedures? Nope. Everything had been done by the book—but the truck's rear bumper had broken off where it was welded to the frame. Guess they just don't make 'em like they used to.

Ups and Downs

"Cause undetermined" is always a bothersome verdict—particularly in an incident as hairy as this one. The C-130 crew were on their way home after three and a half hours of transition work at another base. The Herky Bird was level at 15,000 feet when the control column moved full forward; runaway trim procedures didn't help, but the crew got the machine back under control with old-fashioned muscle power. Then, with the trim indicator reading zero, the control column took off again—this time, full aft.

The crew recovered again and kept pressing for home. The control column went through its full-forward/full-aft cycle again; isolating the utility and booster packs individually didn't help, and the crew finally recovered with both boost packs shut off.

A little experimentation showed that the aircraft handled best at about 180 KIAS with the pilots controlling the yokes and the engineer moving the throttles. This got the crew back to the home drome, but now they were faced with a PAR approach in the weather. They made another control check; 140 to 150 knots with zero flaps provided the best stability, so they set up the final approach in that configuration.



But the roller coaster ride wasn't over. On final, gusty winds dropped the airspeed to between 120 and 130 knots, and the Herk pitched down. Manual control wasn't enough to stop the descent, but full power finally did the trick—at 300 feet AGL and 2.5 miles from the runway! The crew maintained 300 feet until it was time to pull off the power and land. Then—you guessed it—the bird pitched down again. Adding full power one more time, the crew recovered just before touchdown in a nose-high attitude with a 1,500-fpm sink rate and 150 knots of airspeed. The tailskid received some minor damage on touchdown.

Intensive investigation still hasn't turned up a cause for this one.

QS

Hot Herky

Just after takeoff, at about 300 feet AGL, the C-130 crew heard a loud bang and noticed the number four torque gauge reading 5,000 pounds lower than the other three. Next, the right leading-edge-inboard-overheat light illuminated and the leading-edge-temperature indicator went off-scale, high. The crew isolated the wing bleed air system, but number four bleed valve didn't close. Shutting down the number four engine finally cured the overheat, and the crew brought the bird back home.

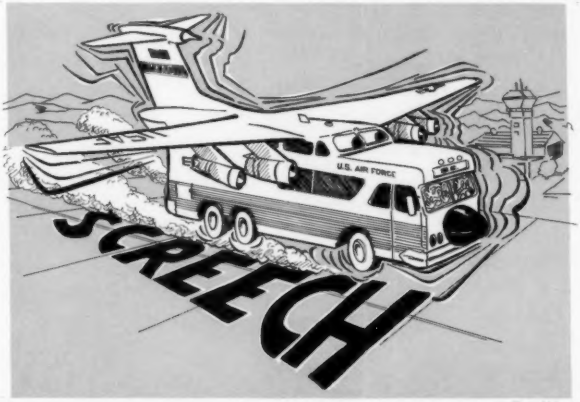
Maintenance found a ruptured T-assembly in the number four engine bleed air system. The bleed air leak had melted and scorched wire bundles in the leading edge, causing erroneous instrument indications in addition to the overheat.

Next Time, Take the Bus

Everybody knows taxi fare is expensive—but would you believe almost $1,500 for a two-mile trip? As a C-141 crew found out, the time you save may not be worth the price.

The MACmen taxied out at oh-dark-thirty for an early morning local. But the weather wasn't cooperating—RVR at the approach end was 700 feet and the forecast was for more of the same. After holding short for about 45 minutes, the crew got the word that the mission had been scrubbed. They asked for clearance to taxi back via the runway.

Both the pilot and the IP were preoccupied with peering through the murk as they rumbled down the runway. Neither noticed that the taxi speed was a tad high—about 110 knots, in fact. Finally, they got on the binders, but it was a little late. Full reverse and max braking brought the 141 to a halt in the overrun. The "taxi fare" of $1,485 covered the cost of replacing five tires.



Notable Quote

Safety is not posters, slogans or catch phrases. It is good health, physical and mental; a "ready" condition, rested and alert. It is meticulous attention to necessary details and the following of professional procedures which have been proven by professionals. It is pride, but not to a fault; it is common sense, but not to the exclusion of knowledge; it is command, but not stifling; it is rigidity, but not at the expense of flexibility. It is teamwork and watchfulness. It is often unsung until it is absent.

—Delta Airlines Safety Bulletin

After Deadline

HELP WANTED

IMMEDIATE OPENING

for a pilot with imagination and good communicative skills. World's finest fly-safe magazine (The MAC Flyer) needs Associate Editor. For the right captain or recently pinned major, it's a three-year assignment to HQ MAC Directorate of Safety--excellent career development plus opportunities for professional military and academic education. Strategic airlift and/or helicopter experience desired; journalism education or experience a plus. Apply now to: The Editor, The MAC Flyer, HQ MAC/IGFE, Scott AFB IL 62225; or call autovon 638-3534.

KOREN KOLLIGIAN, JR. TROPHY for 1977 goes to Maj Gale H. French, flight safety officer with the 439 TAW (AFRES), Westover AFB, Massachusetts. He was cited for preventing loss of life and property damage during a C-123 in-flight emergency last fall. (See "Good Show," TMF, Apr 78.)

SEASONAL WARNING--Thunderstorm encounters are dangerous and expensive. Three MAC airlifters received hail damage already this year. In one case the aircraft's radar didn't paint the storm cell. In another, the transport was already on weather avoidance vectors from ATC. A loss of pressurization forced a third aircrew to descend into an undercast where they encountered hail. Flying into severe weather isn't inevitable. Making the decision not to take off is tough, but sometimes it may be best. Also thorough flight planning, timely updating of weather information, requesting pireps, or even a judicious 180 can help keep you out of trouble.

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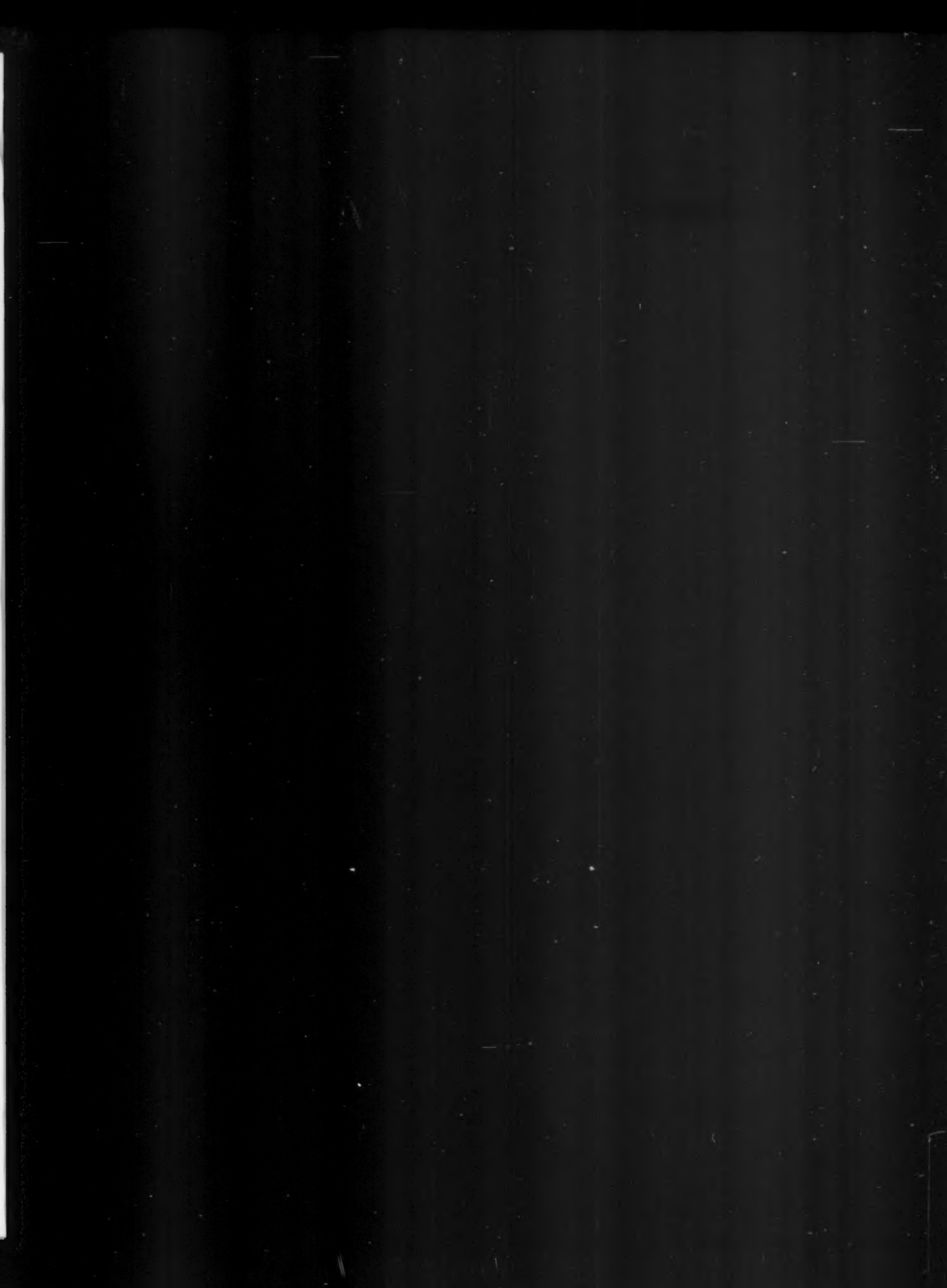
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